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ABSTRACTS

Edited by David E. Zitarelli

Books for abstracting and eventual review should be sent to this department. Materials should be sent to Prof. David E. Zitarelli, Department of Mathematics, Temple University, Philadelphia, PA 19122, U.S.A. (E-mail: ZIT@VM.TEMPLE.EDU)

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In order to facilitate reference and indexing, entries are given abstract numbers which appear at the end following the symbol #. A triple numbering system is used: the first number indicates the volume, the second the issue number, and the third the sequential number within that issue. For example, the abstracts for Volume 20, Number 1, are numbered: 20.1.1, 20.1.2, 20.1.3, etc.

For reviews and abstracts published in Volumes 1 through 13 there are an *author index* in Volume 13, Number 4, and a *subject index* in Volume 14, Number 1.

The initials in parentheses at the end of an entry indicate the abstractor. In this issue there are abstracts by Victor Albis (Bogotá), Irving Anellis (Ames, IA), Maria Teresa Borgato (Ferrara, Italy), Thomas L. Bartlow (Villanova, PA), Timonthy B. Carroll (Ypsilanti, MI), John G. Fauvel (Milton Keynes), David Fowler (Warwick), Ivor Grattan-Guinness (Middlesex), Leon Harkleroad (Poughkeepsie, NY), Calvin Jongsma (Sioux Center, IA), Steve Kennedy (Northfield, MN), Albert C. Lewis (Indianapolis), Laura Nurzia (Reading, England), Peter Ross (Santa Clara, CA), Man-Keung Siu (Hong Kong), and David E. Zitarelli.

Abe, Takehisa. *See* #25.2.62.

Albis-González, Víctor Samuel. Vicisitudes del postulado euclídeo en Colombia [Vicissitudes of the Euclidean Postulate in Colombia], *Revista de la Academia colombiana de ciencias exactas, físicas y naturales* **21** (1997), 281–293. The first part investigates alleged proofs of Euclid's fifth postulate published in Colombia in the 19th century and examines contemporary reactions to these proofs. The second part analyzes mathematical arguments by Julio Garavito Armero on non-Euclidean geometries from 1916 to 1917 and discusses their influence in Colombia up to 1950. (DEZ) #25.2.1

Anacona, Maribel Patricia. *See* #25.2.2.

Arboleda, Luis Carlos and Anacona, Maribel Patricia. Las geometrías no euclidianas en Colombia: La apuesta euclidiana del profesor Julio Garavito (1865–1920) [Non-Euclidean Geometries in Colombia: The Euclidean Bet of Professor Julio Garavito (1865–1920)], *Quipu* **11** (1994), 7–24. From the author's summary: "The aim of this paper is to study Professor Julio Garavito Armero's critical and inflexible position regarding the acceptance and circulation of non-Euclidean geometries in Colombia" (VA) #25.2.2

Ascher, Marcia. Malagasy *Sikidy:* A Case of Ethnomathematics, *Historia Mathematica* **24** (1997), 376–395. A description of the mathematical ideas inherent in *Sikidy,* a system of divination that is important in Madagascar, placing them in their cultural and historical contexts. (DEZ) #25.2.3

0315-0860/98 $25.00

Ascombe, G. E. *See* #25.2.153.

Ausejo, Elena. *See* #25.2.18.

Babai, László. In and Out of Hungary: Paul Erdös, His Friends and His Time, in D. Miklós, V. T. Sós, and T. Szónyi, eds., *Combinatorics: Paul Erdös Is Eighty,* vol. 2, Budapest: Bolyai Society Mathematics Publications, 1996, pp. 7–95. A detailed biography of the peripatetic mathematician Paul Erdös. (DEZ) #25.2.4

Babai, László and Spencer, Joel. Paul Erdös (1913–1996), *Notices of the American Mathematical Society* **45** (1998), 64–73. A tribute to the life and legacy of ''Uncle Paul'' Erdös, called ''the Euler of our times'' in honor of his 1500 publications. (DEZ) #25.2.5

Babai, László; Pomerance, Carl; and Vértesi, Péter. The Mathematics of Paul Erdös, *Notices of the American Mathematical Society* **45** (1998), 19–31. A cross-section of the monumental oeuvre of Paul Erdös, discussing his work in number theory, set theory, combinatorics, probability, and approximation theory. There are seven photographs from the collection of Vera Sós. (DEZ) #25.2.6

Balandier, Georges. *El desorden: La teoría del caos y las ciencias sociales* [*Disorder: Chaos Theory and Social Sciences*], trans. Beatriz López, Barcelona: Editorial Gedisa, 1993, 237 pp. See the review by Luis Riera Climent in *LLULL* **20** (1997), 389–390. (VA) #25.2.7

Baltus, Christopher. Euclid's Book VII and the History Texts, *Bulletin CSHPM/SCHPM* **21** (1997), 4–6. An examination of the generally overlooked importance of the number-theoretic Book VII of Euclid's *Elements.* (DEZ) #25.2.8

Baluzzi, Massimo. *See* #25.2.48.

Barner, Klaus. Paul Wolfskehl and the Wolfskehl Prize, *Notices of the American Mathematical Society* **44** (1997), 1294–1303. The story of the German physician Paul Wolfskehl's fascination with Fermat's Last Theorem and the famous prize he established for the solution. (DEZ) #25.2.9

Barrow-Green, June and Wilson, Robin. Stamp Corner: Mathematical Prizes, *The Mathematical Intelligencer* **19** (4) (1997), 78. Displays stamps of Sonya Kovalevskaya, winner of the Prix Bordin; of King Oscar II of Sweden, who celebrated his 60th birthday by offering a mathematical prize; and of Henri Poincaré, who won the prize. (TLB) #25.2.10

Bashmakova, Isabella Grigoryevna. *Diophantus and Diophantine Equations,* trans. Abe Shenitzer, Washington, DC: Mathematical Association of America, 1997, xiv + 90 pp., softbound, $21.95. A translation of a book published in Russian in 1972 that is mainly concerned with Diophantus's methods of obtaining rational solutions of indeterminate equations. It has been updated by Joseph Silverman. Chapter 1 is devoted to Diophantus as a person. Chapters 8–13 describe the history of Diophantus's methods from the time of Viète until the 1920s. (DEZ) #25.2.11

Belna, Jean-Pierre. Les nombres réels: Frege critique de Cantor et de Dedekind, *Revue d'histoire des sciences* **50** (1996), 131–158. A commentary on Frege's critical remarks, published in 1903, directed against Cantor's and Dedekind's theories of irrational numbers. (JGF) #25.2.12

Beltrami, Elisabetta. *See* #25.2.29.

Berggren, J. Lennart. Mathematics and Her Sisters in Medieval Islam: A Selective Review of Work Done from 1985 to 1995, *Historia Mathematica* **24** (1997), 407–440. A comprehensive survey of work done over the past decade in Western Europe and North America in the history of mathematical geography, astronomy, and optics as practiced in medieval Islam from central Asia to Spain. The author also provides accounts of some current debates on the interpretation of important texts and discusses some of the literature dealing with the interrelation of mathematics and society in medieval Islam. (DEZ) #25.2.13

Berggren, J. Lennart. *See also* #25.2.45.

Bezuska, Stanley J. and Kenney, Margaret J. Even Perfect Numbers: (Update)^2, *The Mathematics Teacher* **90** (1997), 628–633. A brief history of the discoveries of the 36 known perfect numbers up to August 1997, the last requiring two weeks of continuous running time on a Pentium. Is it pure coincidence that the article's initial page number consists of the first two perfect numbers? (DEZ) #25.2.14

Boas, Harold P. The Football Player and the Infinite Series, *Notices of the American Mathematical Society* **44** (1997), 1430–1435. Expository article on a result about Dirichlet series that was known, but not proved, by Harald Bohr, the famous Danish soccer player. (DEZ) #25.2.15

Bollobás, Béla. Paul Erdös—Life and Work, in #25.2.56, vol. 1, pp. 1–41. A brief biography of Paul Erdös followed by a summary of his mathematical spectrum. (DEZ) #25.2.16

Borgato, Maria Teresa and Fiocca, Alessandra. *Carteggio "De Diurno Terrae Motu": Canterzani, Isolani, Matteucci, Bonfioli Malvezzi, Caldani, Calandrelli, Bonati,* Florence: Leo S. Olschki, 1994, 241 pp., hardbound, L. 48,000. This book contains the scientific correspondence of Giambattista Guglielmini dealing with the experimental proof of the earth's rotation. Guglielmini was one of several liberators of Galileo and Copernicus who sought to demonstrate the diurnal motion of the earth by dropping weights from high places. His work represents an important chapter in the long history of the fall of heavy bodies and the Copernican question. See the review by J. L. Heilbron in *Isis* **87** (1996), 177. (MTB) #25.2.17

Brian, Eric and Demeulenaere-Douyère, Christiane. *Histoire et mémoire de l'Académie des Sciences. Guide des Recherches,* Paris: Technique et Documentation, 1996, 450 pp. See the review by Elena Ausejo in *LLULL* **20** (1997), 365–366. (VA) #25.2.18

Bru, Bernard. *See* #25.2.23.

Bueno, Octávio. *See* #25.2.81.

Caballer Vives, María Cinta; Garaizar Axpe, Isabel; and Pellón González, Inéz. El real seminario científico e industrial de Vergara, 1850–1860, *LLULL* **20** (1997), 85–116. The authors analyze the Seminar of Vergara (stemming from the *Real seminario de nobles*) as an educational model with syllabus in secondary education, business, industrial engineering, and mathematics. (VA) #25.2.19

Castro Chadid, Iván. *El cálculo en Colombia: Pasado, presente y futuro* [*Calculus in Colombia: Past, Present, and Future*], Santafé de Bogotá: Grupo Editorial Iberoamericano, 1993, vi + 237 pp. A descriptive history of the teaching of calculus in Colombia from the middle of the 19th century to the last decades of the 20th century. Most of the book is dedicated to the texts used, the programs of mathematics that were implemented, and those who taught mathematics courses (especially calculus) in Colombian universities during the last six decades of this century. Also stressed are the efforts of some universities to use the computer as a tool in the teaching of calculus. (VA) #25.2.20

Caveing, Maurice. *La figure et la nombre: Recherches sur les premières mathématiques des grecs,* Paris: Septentrion, 1997, 430 pp., paperbound, 240 Fr. An examination of the first kinds of mathematics developed by the ancient Greeks, from the breakthrough of the Ionians to the number investigations of the Pythagoreans. The last chapter discusses the mathematical and historical significance of Book II of the *Elements.* (DEZ) #25.2.21

Cervera Vera, Luis. *Instrumentos náuticos inventados por Juan de Herrera para determinar la longitud de un lugar* [*Nautical Instruments Invented by Juan de Herrera to Calculate the Longitude of a Place*], *LLULL* **20** (1997), 143–160. Author's abstract: "Navigators' difficulty in calculating the longitude of a place was resolved by Juan de Herrera using nautical instruments which he had invented. He asked Felipe II for the necessary license to manufacture them, and this was granted by the monarch following a favorable report from the Council of Indies. With the instruments available, the King ordered them

to be used by the Armada of Galleons. For Herrera this represented the satisfaction of his scientific recognition, though he received no financial benefit for his inventions." (VA) #25.2.22

Chatterji, S. D. *See* #25.2.68.

Condorcet. *Arithmétique politique: Textes rares ou inédits* (*1767–1789*), *Édition critique commentée par Bernard Bru et Pierre Crépel,* Paris: Institut national d'études démographiques/PUF, 1994, xxix + 746 pp. and 770 pp. See the review by Gert Schubring in *LLULL* **20** (1997), 377–378. (VA) #25.2.23

Cook, Roger. A Mathematical Centenary: J. J. Sylvester 1814–1897, *Mathematical Spectrum* **30** (1997/1998), 1–2. A brief, popular account of Sylvester's unusual career and wide-ranging interests and research in mathematics. Much familiar content, but nicely presented. (PR) #25.2.24

Cooper, Michael. Who Named the Radian? *Mathematical Gazette* **76** (1992), 100–101. It appears to have been James Thomson, in July 1871, though Thomas Muir claimed to have done so in 1869. Muir and Ellis proposed *radian* as a contraction of *radial angle* in 1874. (JGF) #25.2.25

Corry, Leo. David Hilbert and the Axiomatization of Physics, *Archive for History of Exact Sciences* **51** (1997), 83–198. The sixth of Hilbert's 23 problems, concerning the axiomatization of physics, differs from the others in its generality. Far from an empty formal game, his axiomatic approach was a method for enhancing our understanding of the mathematical content of theories, as can be seen from the manuscript of a course he taught at Göttingen in 1905. (JGF) #25.2.26

Corry, Leo. *Modern Algebra and the Rise of Mathematical Structures,* Basel: Birkhäuser Verlag, 1996, xiv + 460 pp., $139.00. A discussion of mathematical structure and its genesis in the 20th century. Part one considers an example of algebraic structure by following the development of ideal theory from Dedekind through Emmy Noether, comparing 19th-century algebra texts with the classic work of van der Waerden. Part two considers the concept of mathematical structure more generally, looking at ideas by Ore, Bourbaki, and category theorists. See the review by Karl-Heinz Schlote in *Mathematical Reviews* **97i**:01023. (CJ) #25.2.27

Crapo, Henry. Structural Topology, or the Fine Art of Rediscovery, *The Mathematical Intelligencer* **19** (4) (1997), 27–35. The story of the research group on structural topology founded at the University of Montreal in the 1970s. (TLB) #25.2.28

Crépel, Pierre. *See* #25.2.23 and #25.2.46.

Cromwell, Peter; Beltrami, Elisabetta; and Rampichini, Marta. The Borromean Rings, *The Mathematical Intelligencer* **20**(1) (1998), 53–62. Reports on the appearance of three interlocking rings in many aspects of culture, especially on their association with the Borromeo family of northern Italy. (TLB) #25.2.29

Crossley, Richard. York University Library and Associated Libraries, *BSHM Newsletter* **34** (1997), 56–63. A history of the libraries at and near York University, one from A.D. 735. There are descriptions of special collections holding rare books from 17th- and 18th-century England. (DEZ) #25.2.30

Cullen, Christopher. *Astronomy and Mathematics in Ancient China: The Zhou bi suan jing,* Cambridge/New York: Cambridge Univ. Press, 1996, xiv + 241 pp., $69.95. An annotated translation of *The Zhou bi suan jing* that discusses the intellectual and institutional contexts of ancient Chinese work on astronomy and mathematics. See the review by Fa-ti Fan in *Isis* **88** (1997), 529–530. (DEZ) #25.2.31

Dauben, Joseph W. Arguments, Logic and Proof: Mathematics, Logic and the Infinite, in Hans Niels Jahnke, Norbert Knoche, and Michael Otte, eds., *History of Mathematics and Education: Ideas and Experiences,* Göttingen: Vandenhoeck & Ruprecht, 1996, pp. 113–148. Discusses differing philosophical views by various mathematicians regarding the notions of infinity and infinitesimals put forward in the work of Cantor and Robinson. See the review by Detlef Laugwitz in *Mathematical Reviews* **97i**:01003. (CJ) #25.2.32

Dawson, John W., Jr. *Logical Dilemmas. The Life and Work of Kurt Gödel,* Wellesley, MA: A K Peters, Ltd., 1997, xiv + 361 pp., $49.95. A treatment of Gödel's work aimed at a general audience. See *Mathematical Reviews* **98a**:01017, where the reviewer, E. Mendelson, concludes with some corrections and criticisms. He writes, "This is likely to be the definitive study of the life of Kurt Gödel." (TBC) #25.2.33

Dell'Aglio, Luca. Divergences in the History of Mathematics: Borel, Von Neumann and the Genesis of Game Theory, *Rivista de storia della scienze* **3** (1995), 1–45. An examination of the first works of Borel and von Neumann on game theory, with special attention given to the divergence characterizing their conceptual approaches to the subject and to the differences in their theories, in particular, to their contrasting views about the validity of the minimax theorem. (LN) #25.2.34

Demeulenaere-Douyère, Christiane. *See* #25.2.18.

Dhombres, Jean and Dhombres, Nicole. *Lazare Carnot,* Mesnil-sur-l'Éstrée: Fayard, 1997, 770 pp. A scientific biography of the French mathematician Lazare Carnot. See the review by Mariano Hormigón in *LLULL* **20** (1997), 352–353. (VA) #25.2.35

Dhombres, Jean. *See also* #25.2.75.

Dhombres, Nicole. *See* #25.2.35.

Diez, José A. A Hundred Years of Numbers: An Historical Introduction to Measurement Theory 1887–1990. I. The Formation Period. Two Lines of Research: Axiomatics and Real Morphisms, Scales and Invariance, *Studies in History and Philosophy of Science* **28** (1997), 167–185. Historical reconstruction of the formative first part of the history of measurement theory, culminating in the synthesis of two earlier traditions in the 1951 work of Suppes. See the summary in *Mathematical Reviews* **97i**:01024. (CJ) #25.2.36

Dudley, Underwood. *Numerology, or What Pythagoras Wrought,* Washington, DC: Mathematical Association of America, 1997, viii + 316 pp., paperbound, $29.95. A book about number mysticism and numerology from Pythagoras to such modern manifestations as the stock market and biorhythms. (DEZ) #25.2.37

Dugas, René. *Histoire de la mécanique,* Paris: Éditions Jacques Gabay, 1996, 649 pp., 576 Fr. A reprint of an important work on the history of mechanics. For a review of the original 1950 printing, see *Mathematical Reviews* **14,** 341c. (DEZ) #25.2.38

Dupont, Johan; Phillips, Anthony; Retakh, Vladimir; Roitman, Judith; and Saul, Mark. Chih-Han Sah (1934–1997), *Notices of the American Mathematical Society* **45** (1998), 79–83. A tribute to the life, role in education, and broad work of the Chinese mathematician Chih-Han Sah. (DEZ) #25.2.39

Durand-Richard, Marie-José. L'impact des travaux de l'École algébrique anglaise dans les journaux scientifiques autour de 1830, *Rivista de storia della scienza* **3** (1995), 119–155. A comparison of the philosophical conceptions on which W. R. Hamilton based his work on imaginary quantities and quaternions with those of the "English Algebraic School," namely the group of mathematicians formed by C. Babbage, G. Peacock, and others. (LN) #25.2.40

Dutka, Jacques. A Note on "Kepler's Equation," *Archive for History of Exact Sciences* **51** (1997), 59–65. A survey of various methods of solving Kepler's equation $M = E - e \cdot \sin E$ for E the eccentric anomaly of an orbit. (The paper's political history is on shaky ground, however, with a reference to "Harry S. Truman, 32nd President of the United States.") (LH) #25.2.41

Duvina, Sylvain. Le *Journal de mathématiques pures et appliquées* sous la férule de Joseph Liouville (1836–1874): La solitude d'un directeur et ses conséquences, *Rivista de storia della scienza* **3** (1995), 157–171. The paper offers an explanation of the reasons why the French journal at first succeeded and subsequently declined under the direction of its creator, J. Liouville. (LN) #25.2.42

Englisch, Brigitte. Die Artes liberales im frühen Mittelalter (5.-9.Jh.). Das Quadrivium und der Komputus als Indikatoren für Kontinuität und Erneuerung der exakten Wissenschaften zwischen Antike und Mittelalter, *Sudhoffs Archiv* **194,** suppl. 33, 494 pp. Dissertation, Bochum: Ruhr-Universität Bochum, 1992. See the critical review of Englisch's dissertation by Jens Høyrup in *Mathematical Reviews* **98a**:01006. (TBC) #25.2.43

Epple, Moritz. Orbits of Asteroids, a Braid, and the First Link Invariant, *The Mathematical Intelligencer* **20**(1) (1998), 45–52. An investigation of Gauss's notebooks reveals connections between an integral for counting the intertwinings of two closed curves, studies in electromagnetism, studies of planetary orbits, and an early look at braids. (TLB) #25.2.44

Euclid. *Euclid's Phaenomena: A Translation and Study of a Hellenistic Treatise in Spherical Astronomy*, trans. J. L. Berggren and R. S. D. Thomas, 1996, New York/London: Garland Publishing, xxi + 132 pp., $36. A translation into English of Euclid's work on spherical astronomy known as the *Phaenomena*. The translators also supply an introduction to the work. See the review by Lisa Taub in *Isis* **88** (1997), 528–529. (DEZ) #25.2.45

Fan, Fa-ti. *See* #25.2.31.

Farebrother, Richard William. Some Early Statistical Contributions to the Theory and Practice of Linear Algebra, *Linear Algebra and Its Applications* **237/238** (1996), 205–224. Briefly outlines some early 19th-century concepts and techniques of linear algebra related to the method of least squares. See the review by Pierre Crépel in *Mathematical Reviews* **97i**:01015. (CJ) #25.2.46

Fauvel, John. Mathematics in the Ancient World, *BSHM Newsletter* **35** (1997), 11–18. Report of a conference of the British Society for the History of Mathematics held in September 1997, including abstracts of the talks and a list for further reading. (DEZ) $25.2.47

Ferrini, Cinzia. On Newton's Demonstration of Kepler's Second Law in Hegel's *De orbitis planetarum* (1801), *Philosophia Naturalis* **31** (1994), 150–170. Focuses on various viewpoints regarding the topic; includes analysis of possible sources of Hegel's ideas. See the review by Massimo Baluzzi in *Mathematical Reviews* **97i**:01011. (CJ) #25.2.48

Field, J. V. Alberti, the Abacus and Piero Della Francesca's Proof of Perspective, *Renaissance Studies* **11** (1997), 61–88. Alberti's account of the fundamentals of perspective (in Latin, 1435) is compared with Piero's (in the vernacular, 1460s). The extensive differences are partly due to differences in expected readership, but each work was promptly translated into the language of the other. The texts thus shed light on the relationship between the Latin and vernacular traditions. See also #25.1.71. (JGF) #25.2.49

Field, J. V. Rediscovering the Archimedean Polyhedra: Piero della Francesca, Luca Pacioli, Leonardo da Vinci, Albrecht Dürer, Daniele Barbaro, and Johannes Kepler, *Archive for History of Exact Sciences* **50** (1997), 241–289. The rediscovery of the Archimedean polyhedra during the Renaissance was the rediscovery not of a lost text but of actual mathematics and there is a large component of human muddle in what with hindsight might have been a purely rational process. (JGF) #25.2.50

Fiocca, Alessandra. *See* #25.2.17.

Flood, Raymond and Wilson, Robin. Stamp Corner: Chinese Mathematics I, *The Mathematical Intelligencer* **20**(1) (1998), 80. Displays stamps of Zhang Heng, Zu Changzhi, Xiong Qinglai, and Hua Loo-Keng and describes their contributions to mathematics. (TLB) #25.2.51

Folkerts, Menso. *See* #25.2.115.

Fowler, David. Wilbur Knorr (1945–1997), *BSHM Newsletter* **34** (1997), 42–44. Obituary of the Stanford historian of mathematics, Wilbur Knorr. (DEZ) #25.2.52

Franchella, Miriam. On the Origins of Dénes König's Infinity Lemma, *Archive for History of Exact Sciences* **51** (1997), 3–27. Explores work by König in cardinal arithmetic, thereby tracing the genesis of König's Lemma on the existence of infinite paths in trees. (LH) #25.2.53

Fraser, Craig. A Course on the History of Modern Cosmology, *Bulletin CSHPM/SCHPM* **21** (1997), 7. Description of an undergraduate course developed by the author that shows how geometry and analysis have played and continue to play an important role in the more theoretical parts of cosmology. (DEZ) #25.2.54

Friberg, J. *See* #25.2.97.

Garaizar Axpe, Isabel. *See* #25.2.19.

García, José Barrios. Number Systems and Calendars of the Berber Populations of Gran Canaria and Tenerife in the 14th–15th centuries, *BSHM Newsletter* **35** (1997), 33–35. An abstract of the author's doctoral dissertation on ancient number and calendrical systems in the Canary Islands. (DEZ) #25.2.55

Gehring, Frederick. *See* #25.2.80.

Glas, Eduard. *See* #25.2.100.

Graham, Ronald L. and Nešetřil, Jaroslav, eds. *The Mathematics of Paul Erdös*, vols. 1–2, New York/Berlin: Springer, 1997. A collection of papers related to the work of Paul Erdös. Papers of historical interest by Béla Bollobás, Jerrold W. Grossman, and András Hajnal are abstracted separately. (DEZ) #25.2.56

Grant, Hardy and Maher, Philip. Joint BSHM-CSHPM Meeting, *BSHM Newsletter* **35** (1997), 2–10. The authors report separately on the first-ever joint meeting between the British and Canadian organizations devoted to the history of mathematics. There are also abstracts of the 15 papers presented at the meeting. (DEZ) #25.2.57

Grattan-Guinness, Ivor. A Retreat from Holisms: Carnap's Logical Course, 1921–43, *Annals of Science* **54** (1997), 407–421. The intellectual story of Rudolph Carnap (1891–1970) moved through epistemology, syntax, and semantics as he and many colleagues had to move from Central Europe to the United States. (JGF) #25.2.58

Grattan-Guinness, Ivor. General Histories of Mathematics? Of Use? To Whom? in Sergio Nobre, ed., *II Encontro luso-brasiliero de história da matemática: Anais*, São Pedro, 1997, pp. 15–23. General histories should present the broader framework within which the mathematical sciences have developed in all their parts, applications, and rainbow colors. Five cases where research areas have opened up in recent years are described, as are five notable gaps. (JGF) #25.2.59

Gray, Jeremy J. Riemann's Lecture Courses on Complex Function Theory, *The Mathematical Intelligencer* **19**(4) (1997), 58–62. An account of Riemann's course on complex functions based on lecture notes prepared by some of his auditors. (TLB) #25.2.60

Gray, Jeremy J. *See also* #25.2.102.

Grossman, Jerrold W. Paul Erdös: The Master of Collaboration, in #25.2.56, vol. 2, pp. 467–476. A statistical summary of the work and collaboration of Paul Erdös. (DEZ) #25.2.61

Gustafson, Karl and Abe, Takehisa. The Third Boundary Condition—Was it Robin's? *The Mathematical Intelligencer* **20**(1) (1998), 63–71. Addresses the questions "Who was Gustav Robin?" and "Why was the third boundary condition of partial differential equations named after him?" (TLB) #25.2.62

Hairer, Ernst and Wanner, Gerhard. *Analysis by Its History*, New York: Springer-Verlag, 1996, 374

pp., hardbound, $42.95. A textbook that draws on original sources from 1600 to 1900 to present real analysis in a historically directed context. See the review by John Troutman in *The American Mathematical Monthly* **105** (1998), 79–81. (DEZ) #25.2.63

Hajnal, András. Paul Erdös's Set Theory, in #25.2.56, vol. 2, pp. 352–393. A discussion of the work of Paul Erdös on set theory with revealing stories from four decades of collaboration between the author and Erdös. (DEZ) #25.2.64

Hannabuss, Keith. Sound and Symmetry, *The Mathematical Intelligencer* **19**(4) (1997), 16–20. A personal account of Michael Gerzon and his contributions to acoustics. (TLB) #25.2.65

Hargittai, István. A Great Communicator of Mathematics and Other Games: A Conversation with Martin Gardner, *The Mathematical Intelligencer* **19**(4) (1997), 36–40. Martin Gardner talks about his life and mathematicians he has known. Photographs. (TLB) #25.2.66

Hayashi, Takao. Āryabhata's Rule and Table for Sine-Differences, *Historia Mathematics* **24** (1997), 396–406. The author provides a new interpretation of Āryabhata's rule for sine-differences prescribed in the second chapter of *Āryabhatīya*. He also suggests a conjecture on the origin of Āryabhata's table of sine-differences given in the first chapter. (DEZ) #25.2.67

Heilbron, J. L. *See* #25.2.17.

Hennequin, P.-L. L'oeuvre scientifique d'Albert Badrikian, *Annales mathématiques Blaise Pascal* **1996,** Numéro Spécial, 1–11. Sympathetic account of the life and mathematical work of Albert Badrikian (1933–1994). See the review by S. D. Chatterji in *Mathematical Reviews* **97i**:01033. (CJ) #25.2.68

Hormigón, Mariano. *See* #25.2.35.

Høyrup, Jens. Linee larghe: Un'ambiguità geometrica dimenticata [Lines with Breadth: A Neglected Geometrical Ambiguity], *Bollettino di storia delle scienze matematiche* **15** (1995), 3–14. This paper argues that lines with breadth (or stripe-lines), commonly used in surveying as testified by the books of Leonardo Fibonacci and Luca Pacioli, are a key to a deeper understanding of some parts of ancient mathematics considered obscure or even erroneous by modern historians. (LN) #25.2.69

Høyrup, Jens. *See also* #25.2.43.

Jaffard, Stephane. *See* #25.2.86.

James, Ioan M. James Joseph Sylvester, FRS (1814–1897), *Notes and Records of the Royal Society of London* **51** (1997), 247–261. Centenary memoir on the life of the 19th-century, British mathematician J. J. Sylvester. (JGF) #25.2.70

Johnson, William. Charles Hutton, 1737—1823: The Prototypical Woolwich Professor of Mathematics, *Journal of Mechanical Machine Technology* **18** (1989), 195–230. Illustrated sketch of Charles Hutton's career and works, with short notes on some contemporaries and colleagues. (IGG) #25.2.71

Johnson, William. Isaac Todhunter (1820–1884): Textbook Writer, Scholar, Coach and Historian of Science, *International Journal of Mechanical Sciences* **38** (1996), 1231–1270. An illustrated survey of the professional teaching career of Isaac Todhunter, with a survey of his historical books, which are better remembered than the author seems to realize. Some textbooks are also noted but not his research papers. (IGG) #25.2.72

Johnson, William. Ricochet of Non-spinning Projectiles, Mainly from Water, *International Journal of Impact Engineering* **21** (1998), 15–34. Two-part survey of some main workers, from Benjamin Robbins, through G. D. Birkhoff, to Barnes Wallis and his famous bouncing bombs of the Second World War. (IGG) #25.2.73

Johnson, William. The Woolwich Professors of Mathematics 1741–1900, *Journal of Mechanical Machine*

Technology **18** (1989), 145–194. Biographical survey, including also little-known information on the teaching and discipline. Main figures include Thomas Simpson, John Bonnycastle, S. H. Christie, and J. J. Sylvester (there is an appendix on some of his applied mathematics). Notice also of *Ladies' Diary* and *Gentleman's Diary* to which Woolwichonians contributed. (IGG) #25.2.74

Jullien, Vincent. *Éléments de Géométrie de G. P. Roberval*, Paris: VRIN, 1996, 544 pp. The publication of the heretofore unpublished manuscript, *Éléments de Géométrie* (1675), by G. P. de Roberval. There is a preface by Jean Dhombres. See also #21.4.58 and #22.1.93. (DEZ) #25.2.75

Kahane, Jean-Pierre. A Century of Interplay between Taylor Series, Fourier Series and Brownian Motion, *Bulletin of the London Mathematical Society* **29** (1997), 257–279. An extended version of a lecture about the three topics in the title from 1895 to 1995, concentrating on the first half-century. See the review by Tao Qian in *Mathematical Reviews* **98a**:01015. (TBC) #25.2.76

Kaye, David. *See* #25.2.85.

Kenney, Margaret J. *See* #25.2.14.

Kilmister, C. W. *See* #25.2.109.

Kleinert, Ernst. Über das Unendliche in der Mathematik, *Mathematische Semesterberichte* **40** (1993), 29–37. Hilbert's formalism is seen to stem from his defense of Cantor's transfinite. (IA) #25.2.77

Knorr, Wilbur. Sacrobosco's *Quadrans*: Date and Sources, *Journal for the History of Astronomy* **28** (1997), 187–222. Johannes de Sacro Bosco (John Holy Wood) was one of the leading textbook writers of all time. *Quadrans*, on the quadrant, was one of his less popular works, passing out of use after 1300, probably displaced by the *Quadrans vetus* of Johannes Anglicus. (JGF) #25.2.78

Kra, Irwin. *See* #25.2.80.

Krantz, Steven G., ed. Lars Valerian Ahlfors (1907–1996), *Notices of the American Mathematical Society* **45** (1998), 248–255. A biographical sketch of Lars Ahlfors by the editor, who calls him ''arguably the preeminent complex function theorist of the 20th century'' (p. 248), followed by the reminiscences of seven prominent mathematicians. (DEZ) #25.2.79

Krantz, Steven G., ed. The Mathematics of Lars Valerian Ahlfors, *Notices of the American Mathematical Society* **45** (1998), 233–242. Three articles about different aspects of the work of the Finnish mathematician Lars Ahlfors, who spent most of his professional life at Harvard. Robert Osserman surveys Ahlfors's contributions to conformal geometry, Irwin Kra his work on Kleinian groups, and Frederick Gehring his achievements in quasiconformal mappings. (DEZ) #25.2.80

Larvor, Brendan P. Lakatos as Historian of Mathematics, *Philosophia Mathematica* **5** (1997), 42–64. A discussion of the connection between Imre Lakatos's philosophy of mathematics and the history of mathematics that concludes, ''The prospects for developing a Lakatosian approach to the philosophy and history of mathematics may not be entirely discouraging.'' See the review by Octávio Bueno in *Mathematical Reviews* **98a**:01016. (TBC) #25.2.81

Laugwitz, Detlef. *See* #25.2.32.

Lichtenberg, Jeiner. Zur Interpretation der Gaußschen Osterformel und ihrer Ausnahmeregeln, *Historia Mathematica* **24** (1997), 441–444. The author presents a revised version of Gauss's Easter formula. (DEZ) #25.2.82

Lindberg, David C. *Roger Bacon and the Origins of Perspective in the Middle Ages: A Critical Edition and English Translation of Bacon's Perspectiva with Introduction and Notes*, Oxford/New York, Oxford Univ. Press, 1996, cxii + 411 pp., $105. (DEZ) #25.2.83

Llúis Prades, J. *See* #25.2.153.

Lyuter, I. O. *See* #25.2.115.

MacLane, Saunders. Garrett Birkhoff and the *Survey of Modern Algebra, Notices of the American Mathematical Society* **44** (1997), 1438–1439. A memorial tribute to Garrett Birkhoff, recalling the writing of the classic text, *Survey of Modern Algebra*. (DEZ) #25.2.84

Maher, Philip. *See* #25.2.57.

Mallion, Roger and Kaye, David. J. J. Sylvester (1814–1897), *BSHM Newsletter* **34** (1997), 6–15. Two accounts of a commemorative day on March 14, 1997, recognizing the centenary of J. J. Sylvester's death, held at Balls Pond Road Cemetery and University College London. Abstracts of talks about Sylvester's life, applied (and applicable) mathematics, and pure mathematics are given. (DEZ) #25.2.85

Mandelbrot, Benoit B. and Jaffard, Stéphane. Peano-Pólya Motions, When Time Is Intrinsic or Binomial (Uniform or Multifractal), *The Mathematical Intelligencer* **19**(4) (1997), 21–26. The mathematics of space-filling curves with some history. (TLB) #25.2.86

Manders, Kenneth L. Descartes et Faulhaber, *Archives de Philosophie* **58** (1995), 1–11. The author presents textual evidence that reveals striking similarities in the work of René Descartes and Johann Faulhaber (1580–1635) to confirm that ''Descartes a rendu visite à Faulhaber, et a entretenu pendant un certain temps une authentique collaboration mathématique avec lui'' (p. 11). (DEZ) #25.2.87

Martinović, Ivica. The Verses of Rajmund Kunić on Ruđer Bošković [in Croatian], *Anali Dubrovnik* **34** (1996), 151–184. An analysis of three poetic genres used in the six epigrams written by the Croatian Latinist Rajmund Kunić to praise the work in astronomy and natural philosophy of his famous compatriot Ruđer Bošković. The author traces the reception of Kunić's work from 1764 through 1800. (DEZ) #25.2.88

Mendelson, E. *See* #25.2.33.

Meusnier, Norbert. L'émergence d'une mathématique du probable au xvii^{e} siècle, *Revue d'histoire des mathématiques* **2** (1996), 119–147. An intricate web of conditions made for the rise of a mathematics of the probable in the latter part of the 17th century. The concept of value for the expectation in a risk situation was central, on the pattern of a wager in a game of chance. In this way Jakob Bernoulli's approach becomes intelligible. (JGF) #25.2.89

Michel-Pajus, Anne. *See* #25.2.141.

Mishra, V. and Singh, S. L. First Degree Indeterminate Analysis in Ancient India and Its Application by Vīrasena, *Indian Journal of History of Science* **32** (1997), 127–133. The authors apply the kuṭṭaka (pulverize) method to solve a problem of Vīrasena (c. 816) to obtain a better approximation of π than the one discovered by Āryabhata (c. 499). (DEZ) #25.2.90

Mishra, V. and Singh, S. L. Height and Distance Problems in Ancient Indian Mathematics, *Ganita-Bhāratī: Bulletin of the Indian Society for History of Mathematics* **18** (1996), 25–30. An analysis of shadow problems (height and distance) from *Āryabhatīya* (c. 499), and its commentaries, and from *Nāradapurāna* (c. 1150). (DEZ) #25.2.91

Mishra, V. and Singh, S. L. Theorem of Square on the Diagonal in Vedic Geometry and Its Application, *Indian Journal of History of Science* **31** (1996), 157–166. The authors locate 18 Pythagorean triples and their mirror images in verses describing the construction of the Mahāvedi, which in the opinion of the authors, dates to 3000 B.C. (DEZ) #25.2.92

Monteiro de Souza, Cicero. *See* #25.2.116.

Moreno Armella, Luis. Matematicas, explicar y comprender [Mathematics, To Explain and To Understand], *Revista de la Academia colombiana de ciencias exactas, fisicas y naturales* **20** (1996), 539–547.

An analysis of the main periods of the evolution of geometry, focusing on those trends which led to non-Euclidean geometry. (DEZ) #25.2.93

Moschovakis, Yannis and Yates, Mike. In Memoriam: Robin Oliver Gandy, 1919–1995, *Bulletin of Symbolic Logic* **2** (1996), 367–370. Sketch of the life and work of Robin Gandy, including his contributions to recursion theory and descriptive set theory as well as his friendship with Alan Turing. (IA) #25.2.94

Murawski, Roman. Hilbert's Program: Incompleteness Theorems vs. Partial Realizations, in Jan Woleński, ed., *Philosophical Logic in Poland*, Dordrecht: Kluwer, 1994, pp. 103–127. A sketch of work on the problems of implementing Hilbert's program, especially work carried out in Poland. (IA) #25.2.95

Murawski, Roman. Zygmunt Ratajczyk (1949–1994) [in Polish], *Wiadomości Matematyczne* **32** (1996), 183–189. A presentation of Zygmunt Ratajczyk's most important results and brief biographical material. See the review by Andrzej Orlicki in *Mathematical Reviews* **98a**:01019. (TBC) #25.2.96

Muroi, Kazuo. Two Harvest Problems of Babylonian Mathematics, *History of Science* **5** (1996), 249–254. An interpretation of two old Babylonian mathematical texts that had "for many years doggedly resisted all interpretation attempts." See *Mathematical Reviews* **98a**:01002. The reviewer, Jöran Friberg, believes the importance of the achievement was not sufficiently stressed. (TBC) #25.2.97

Nešetřil, Jaroslav. *See* #25.2.56.

Neuenschwander, Erwin. Felix Hausdorffs letzte Lebensjahre nach Dokumenten aus dem Bessel-Hagen-Nachlass, in Egbert Brieskorn, ed., *Felix Hausdorff zum Gedächtnis*, Opladen: Vieweg, 1996, pp. 253–270. In the difficult years of Jewish persecution in Germany, Felix Hausdorff was befriended by the mathematician and mathematical historian, Erich Bessel-Hagen (1898–1946). This paper presents excerpts from the latter's correspondence with his family and with others such as André Weil and Otto Neugebauer, between 1930 and Hausdorff's death by suicide in 1942, that provide information about Hausdorff's last years. (ACL) #25.2.98

Neuenschwander, Erwin. Reflections on the Sources of Arabic Geometry, *Sudhoffs Archiv* **72** (1988), 160–169. A comparison of the geometric section of al-Khwārizmī's *Algebra* with the geometry found in the Hebrew *Mishnat ha-Middot* shows that the two works are closely related in content and arrangement. The author draws conclusions regarding the most probable textual transmission in an important paper that seems to be overlooked. (DEZ) #25.2.99

Orlicki, Andrzej. *See* 25.2.96.

Osserman, Robert. *See* #25.2.80.

Otte, Michael. Gegenstand und Methode in der Geschichte der Mathematik, *Philosophia Naturalis* **29** (1992), 31–68. An analysis of what the author considers to be a dialectical transition from 18th- to 19th-century mathematics, drawing upon a wide range of philosophical perspectives and developments. This transition is characterized as a shift from concern with mathematical objects to one focused on mathematical methods/means, which he terms metamathematics. See the review by Eduard Glas in *Mathematical Reviews* **97i**:01004. (CJ) #25.2.100

Otte, Michael. *See also* #25.2.125.

Parameswaran, S. Whish's Showroom Revisited, *Mathematical Gazette* **76** (1992), 28–36. Charles Whish's pioneering 1838 paper, "On the Hindu Quadrature of the Circle," helped to establish that Gregory's series for $\tan^{-1}$ and Leibniz's series for $\pi/4$ were known much earlier in India, credited to the Keralese mathematician Madhavan (c. 1340–1425). (JGF) #25.2.101

Paxson, James J. The Allegory of Temporality and the Early Modern Calculus, *Configurations* **4** (1996), 39–66. Provides a semiotic analysis of early calculus, comparing it to Baroque aesthetic developments;

lacks mathematical and historical depth. See the review by Jeremy Gray in *Mathematical Reviews* **97i**:01013. (CJ) #25.2.102

Pechenkin, Alexander A. The Educational System of the Moscow Physico-Technological Institution in Context, *LLULL* **20** (1997), 217–237. Using unpublished archival material the author examines the educational system and the social and political backgrounds of the Moscow Physico-Technological Institute. (VA) #25.2.103

Pellón González, Inés. *See* #25.2.19.

Pesas i Puig, Albert. Un ejemplo de la geometría práctica del gótico: El *Büchlein der Fialen Gerechtigkeit* y la *Geometria deutsch* de Matthäus Roriczer [An Example of Gothic Practical Geometry: Matthäus Roriczer's *Büchlein der Fialen Gerechtigkeit* and *Geometria deutsch*], *LLULL* **20** (1997), 239–271. From the author's abstract: "This article presents the geometry of the late Gothic masons, commenting on two booklets by Matthäus Roriczer and their essential characteristics, and comparing them with the theoretical tradition." (VA) #25.2.104

Petrova, Svetlana S. and Solov'ev, Alexander D. The Origin of the Method of Steepest Descent, *Historia Mathematica* **24** (1997), 361–375. An analysis of the creation of the method of steepest descent, also known as the saddle-point method, often attributed to Peter Debye in 1909. The authors date the method back to Cauchy, and document the assertion that the Russian mathematician, Pavel Alexeevich Nekrasov, had already used this technique and extended it to more general cases 25 years before Debye. (DEZ) #25.2.105

Phillips, Anthony. *See* #25.2.39.

Pierpoint, William S. Edward Stone (1702–1768) and Edmund Stone (1700–1768): Confusing Identities Resolved, *Notes and Records of the Royal Society of London* **51** (1997), 211–217. Two E. Stones wrote mathematical letters to the Royal Society in the 18th century. Edmund Stone FRS, son of the Duke of Argyle's gardener (writer of "On Sir Isaac Newton's First Diverging Parabolas," 1743) is not the same as the Oxford graduate Rev. Edward Stone (writer of "Of Cubic Equations," 1767). (JGF) #25.2.106

Pomerance, Carl. *See* #25.2.6.

Qian, Tao. *See* #25.2.76.

Raga, Vicent. *See* #25.2.153.

Rampichini, Marta. *See* #25.2.29.

Ransom, Peter. Newton's Sundials, *BSHM Newsletter* **34** (1997), 50–53. A description of sundials said to have been designed by Sir Isaac Newton. (DEZ) #25.2.107

Ransom, Peter. The Sundial Angels of France, *BSHM Newsletter* **35** (1997), 26–29. A description of the sundial angels on three cathedrals in France, comparing them with two similar figures at Strasbourg and one at Gourdon. (DEZ) #25.2.108

Reich, Karin. *Die Entwicklung des Tensorkalküls: Vom absoluten Differentialkalkül zur Relativitätstheorie*, Basel/Boston: Birkhäuser Verlag, 1994, 331 pp. An account of the development of tensor analysis from differential calculus to the theory of relativity. See the review by C. W. Kilmister in *Isis* **88** (1997), 550–551. (DEZ) #25.2.109

Restrepo Sierra, Guillermo. Empirismo y matemáticas [Empiricism and Mathematics], *Matemáticas. Enseñanza Universitaria* **5** (1997), 73–120. Based on his interpretation of Hume's empiricism, the author shows that this doctrine cannot serve as a philosophical ground for mathematics. (VA) #25.2.110

Retakh, Vladimir. *See* #25.2.39.

Ribe, Neil. Cartesian Optics and the Mastery of Nature, *Isis* **88** (1997), 42–61. The practical intent of

Descartes's 1637 *Dioptrics* is seen in his instrumentalist derivation of the sine law of refraction, based on a mathematizable model requiring no consideration of the nature of light. Its ultimate goal was to ''master'' human vision by raising it to an instrument of scientific knowledge. (JGF) #25.2.111

Rice, Adrian. Inspiration or Desperation? Augustus De Morgan's Appointment to the Chair of Mathematics at London University in 1828, *British Journal for the History of Science* **30** (1997), 257–274. In what turned out to be an inspired appointment, the newly founded London University in 1828 appointed Augustus De Morgan to the chair of mathematics, at 21 the youngest of over 30 candidates, for reasons including the strength of his testimonials, the weakness of those of others, the breadth of his education, his nonconformist tendencies, unwillingness of others to stand, and perhaps an (unfounded) belief that he would be pliable. (JGF) #25.2.112

Rice, Adrian. The Book That Changed My Life, *BSHM Newsletter* **34** (1997), 54–55. Reading Augustus De Morgan's *A Budget of Paradoxes* altered the way the author perceived history and historical figures. (DEZ) #25.2.113

Riera Climent, Luis. *See* #25.2.7, #25.2.117, and #25.2.153.

Roitman, Judith. *See* #25.2.39.

Rota, Gian-Carlo. The Many Lives of Lattice Theory, *Notices of the American Mathematical Society* **44** (1997), 1440–1445. A memorial tribute to Garrett Birkhoff that retraces much of the hostility directed toward lattices from their discovery by Dedekind to their rediscovery by Birkhoff. (DEZ) #25.2.114

Rozhanskaya, M. M.; Lyuter, I. O.; and Folkerts, Menso, eds. *A. P. Yushkevich, Kurt Vogel: The History of Mathematics With No Limits* [in Russian], Moscow: Yanus-K., 1997, 310 pp., hardbound. This book contains the scientific correspondence between two renowned historians of mathematics, Adolf Pavlovich Yushkevich (1906–1993) and Kurt Vogel (1888–1985), from 1955 until Vogel's death 30 years later. The letters, currently stored in archives at the Ludwig Maximilian University in Munich and the S. I. Vavilov Institute at the Russian Academy of Science, contain valuable information previously unknown about the development of contemporary mathematics. The editors have translated Vogel's letters into Russian. (DEZ) #25.2.115

Sánchez Fernández, Carlos and Monteiro de Souza, Cicero. El caso Souzinha y la polémica sobre el uso legítimo de las series divergentes en el siglo XIX [Souzinha and the Polemics on Divergent Series in the 19th Century], *LLULL* **20** (1997), 293–310. This paper deals with the work of the Brazilian mathematician, Joaquim Gomes de Souza (1829–1864) (a.k.a. Souzinha), on the use of divergent series in the solution of integrodifferential equations. The Academy of Paris never pronounced its opinion on de Souza's work, at a time when the legitimate use of divergent series in analysis was at stake in Europe. De Souza was the first Ph.D. in the physical and mathematical sciences in Brazil. (VA) #25.2.116

Sánchez Ron, José Manuel. *La ciencia, su estructura y futuro* [*Science: Its Structure and Future*], Madrid: Editorial Debate, 1995, 128 pp. See the review by Luis Riera Climent in *LLULL* **20** (1997), 387–388. (VA) #25.2.117

Saul, Mark. *See* #25.2.39.

Schlote, Karl-Heinz. *See* #25.2.27.

Schubring, Gert. Changing Cultural and Epistemological Views of Mathematics and Different Institutional Contexts in Nineteenth-Century Europe, in C. Goldstein, J. Gray, and J. Ritter, eds., *L'Europe mathématique: Mythes, histoires, identités*, Paris: Éditions de la Maison des Sciences de l'Homme, 1996, pp. 361–388. A thoughtful study of ''the marked differences between the sciences as practised in different countries'' (p. 363) in 19th-century Europe from a theme of ''flow of communication.'' The author chooses France as a frame of reference and contrasts its educational system, scientific publications, and translations with those in Germany, England, Italy, and Greece. (DEZ) #25.2.118

Schubring, Gert. Differences in the Involvement of Mathematicians in the Political Life in France and in Germany, *Bollettino di storia delle scienze matematiche* **15** (1995), 61–83. A contrast between the active political involvement of French mathematicians and the ''general political abstinence in the German . . . mathematics community'' (p. 79). The author examines the political activities of two German exceptions, Mathias Metternich (1747–1825) and Johann Georg Tralles (1763–1822). (DEZ) #25.2.119

Schubring, Gert. Tendencias actuales en la investigacion sobre la historia institucional de la ciencia y su aplicacion a la cultura islamica, *LLULL* **19** (1996), 177–193. A discussion of ''recent achievements of [the] history of science for modern times'' that ''develops some general categories for analyzing structural patterns in the history of science. The application of these categories to the case of science in the Islamic civilization and its institutions sheds new light on the frequently debated issues of [the] latter's decline. Particular emphasis is put on the impact of charitable foundations'' (p. 177). (DEZ) #25.2.120

Schubring, Gert. *See also* #25.2.23.

Schuppener, Georg. Kepler's Relation to the Jesuits: A Study of His Correspondence with Paul Guldin, *NTM* **5** (1997), 236–244. Eleven letters are extant from Kepler to the Jesuit mathematician, Paul Guldin (1577–1643), written 1618–1628. These draw a detailed picture of the difficult and insecure conditions of his scientific work. Although the relationship appears to be asymmetrical, this may be because Guldin's replies are mostly missing. (JGF) #25.2.121

Scriba, C. J. *See* #25.2.137.

Senechal, Marjorie. The Continuing Silence of Bourbaki—An Interview with Pierre Cartier, June 18, 1997, *The Mathematical Intelligencer* **20**(1) (1998), 22–28. Pierre Cartier, a member of Bourbaki from 1955 to 1983, reflects on Bourbaki and mathematics in the 20th century. (TLB) #25.2.122

Siegmund-Schultze, Reinhard. Ein Bericht Felix Kleins aus dem Jahre 1902 über seine mathematischen Vorträge in den Vereinigten Staaten 1893 und 1896, *NTM Schriftenreihe für Geschichte der Naturwissenschaften, Technik and Medizin* **5** (1997), 245–252. An annotated transcription is given of Klein's report for the Prussian ministry of education on his American lecture tour. The author's introduction relates this report to the beginning of a German cultural policy toward the U.S. and in particular to the beginning of an exchange of professors between the two countries. (ACL) #25.2.123

Siegmund-Schultze, Reinhard. Felix Kleins Beziehungen zu den Vereinigten Staaten, die Anfänge deutsche auswärtiger Wissenschaftspolitik und die Reform um 1900, *Sudhoffs Archiv* **81** (1997), 21–38. Felix Klein influenced a German view of American mathematics and of its place in American culture at the turn of the century. This paper explores how this view was colored by Klein's personal beliefs and agenda and differed from that of other German travelers. Coeducational schools and admission of women to university matriculation are examples of extramathematical policies at issue. Part of the German motivation for an interest in the United States was Germany's competitive relationship with England and France. (ACL) #25.2.124

Siegmund-Schultze, Reinhard. The Failed Fusion of Two Mathematical Reviewing Journals 1932–1934—An Episode from the History of Dutch–German Mathematical Relations, *CWI Quarterly* **9** (1996), 131–135. Reports an attempt in 1932 by Brouwer and Bieberbach to combine the German *Jahrbuch über die Fortschritte der Mathematik* with the Dutch *Revue semestrielle des publications mathématiques*. See the review by Michael Otte in *Mathematical Reviews* **97i**:01056. (CJ) #25.2.125

Simms, D. L. The Trail for Archimedes's Tomb, *Journal of the Warburg and Courtauld Institutes* **53** (1990), 281–286. A survey of the evidence and what people thought they found regarding the tomb of Archimedes. (DF) #25.2.126

Singh, S. L. *See* #25.2.90, #25.2.91, and #25.2.92.

Singmaster, David. Mathematical Gazetteer of Britain #7: Canterbury to Croft-on-Trees, *BSHM Newsletter* **34** (1998), 47–49. A continuation of the author's series of short descriptions about British mathematicians and mathematical sites. (DEZ) #25.2.127

Singmaster, David. Mathematical Gazetteer of Britain #8: Daresbury to Durham, *BSHM Newsletter* **35** (1997), 20–25. A continuation of #25.2.127, including a detailed account of activity in Dublin. (DEZ) #25.2.128

Siu, Man-Keung. Success and Failure of Xu Guang-qi: Response to the First Dissemination of European Science in Ming China, *Studies in History of Medicine & Science* **14** (1995/1996), 137–179. Joseph Needham asked why modern science, as opposed to ancient and medieval science, developed only in the Western World. Many scholars have offered critical analyses of this issue, and the late Ming Dynasty is a critical period. The life and career of Xu Guang-qi (1526–1633) provide a synopsis of the adversity of his times. A study of his life and career affords one approach, albeit laterally, to answer Needham's query. This paper centers mainly on Xu Guang-qi's effort to transmit western knowledge in mathematics and astronomy, and his attempt to promulgate the scientific way of thinking and working. (MKS) #25.2.129

Siu, Man-Keung. The ABCD of Using History of Mathematics in the (Undergraduate) Classroom, *Bulletin of the Hong Kong Mathematical Society* **1** (1997), 143–154. Some teaching experience in using history of mathematics in the undergraduate classroom is shared through selected illustrative examples. These can be roughly categorized into four "levels": anecdotes, broad outline, content, and development of mathematical ideas. (MKS) #25.2.130

Skinner, Iain. Quetelet and Dandelin of Brussels, *The Mathematical Intelligencer* **19** (4) (1997), 55–57. Brief lives of Lambert Adolphe Jacques Quetelet and Germinal Pierre Dandelin. Photographs of a statue of Quetelet and of the Observatory he founded. Directions to these sites. (TLB) #25.2.131

Smale, Steve. Finding a Horseshoe on the Beaches of Rio, *The Mathematical Intelligencer* **20**(1) (1998), 39–44. Smale describes his research on dynamics in Rio de Janeiro in 1960, with support of the National Science Foundation. The support became controversial later in the 1960s when Smale became an anti-war activist and a Fields Medal winner. (TLB) #25.2.132

Smithies, Frank. The Development of a Historian, *BSHM Newsletter* **35** (1997), 29–31. A personal account of how the author gradually became an historian of mathematics. (DEZ) #25.2.133

Solov'ev, Alexander D. *See* #25.2.105.

Sós, Vera. *See* #25.2.6.

Spencer, Joel. *See* #25.2.5.

Stapleton, Darwin H. Dirk J. Struik's *Yankee Science in the Making:* A Half-Century Retrospective, *Isis* **88** (1997), 505–511. After "reviewing briefly the background and accomplishments of the scholar" (p. 506) Dirk J. Struik, the author answers two questions regarding Struik's 1948 book, *Yankee Science in the Making:* Why has it been so durable? What has been its contribution to scholarship? (DEZ) #25.2.134

Taimina, Daina. 20 Years Teaching Mathematics through History, *BSHM Newsletter* **35** (1997), 44–46. An account of the history of mathematics in Latvia and how it influenced the author's teaching of mathematics. (DEZ) #25.2.135

Taimina, Daina. *The History of Mathematics* [in Latvian], Riga: Zvaigzne, 1990, 200 pp. A compact textbook on the history of mathematics whose size is due to the paper shortage that plagued Latvia at the time of publication, right before the country achieved independence. The book, whose title is *Matematikas vesture,* is aimed for prospective teachers. One chapter is devoted to the history of mathematics in Latvia. (DEZ) #25.2.136

Tannery, Paul. *Mémoires scientifiques. Tome I,* Sceaux: Éditions Jacques Gabay, 1995, xiii + 468 pp., 441 Fr. A reprint of the 1912 book containing the work of Paul Tannery, one of the founding fathers of the modern history of science, on the history of the exact sciences in antiquity published in the period 1876–1883. There is a foreword by J.-L. Heiberg and H. G. Zeuthen. See the review by C. J. Scriba in *Mathematical Reviews* **98a**: 01025a. (DEZ) #25.2.137

Tannery, Paul. *Mémoires scientifiques. Tome II,* Sceaux: Éditions Jacques Gabay, 1995, viii + 555 pp., 513 Fr. A reprint of the 1912 book that is a continuation of #25.2.137 for the period 1883–1898. (DEZ) #25.2.138

Tannery, Paul. *Mémoires scientifiques. Tome III,* Sceaux: Éditions Jacques Gabay, 1995, viii + 420 pp., 405 Fr. A reprint of the 1915 book that is a continuation of #25.2.138 for the period 1899–1913. (DEZ) #25.2.139

Taub, Lisa. *See* #25.2.45.

Thiele, Rüdiger. Über die Variationsrechnung in Hilberts Werken zur Analysis, *NTM* **5** (1997), 23–42. In his 1900 Paris address Hilbert raised issues of the existence and regularity of solutions of elliptic partial differential equations. Even as he published his first results, he was turning to integral equations, recognizing that the flexibility of this branch helped toward his goal of a unifying methodological approach to analysis. (JGF) #25.2.140

Thiele, Rüdiger and Michel-Pajus, Anne. Research in Progress, *BSHM Newsletter* **34** (1997), 16–28. Reflections of a four-day conference aimed at bringing together those with a serious interest in research in the history of mathematics. Abstracts of the papers presented at the conference are given. (DEZ) #25.2.141

Thomas, R. S. D. *See* #25.2.45.

Troutman, John. *See* #25.2.63.

Turán, Paul. The Fiftieth Anniversary of Paul Erdös, in Paul Erdös, ed., *Collected Papers of Paul Erdös,* Budapest: Akadémiai Kiadó, vol. 2, 1990, pp. 1493–1516. A survey of all areas of the work of Paul Erdös except set theory, written by Erdös's close friend and collaborator. (DEZ) #25.2.142

Valentine, Jeremy. Hobbes's Political Geometry, *History of the Human Sciences* **10** (1997), 23–40. Geometry held a privileged position in Hobbes's political thought because geometry provides an exemplary model of philosophical writing and because it authorizes a social ordering of the body politic as a self-sufficient enterprise. (JGF) #25.2.143

Van Brummelen, Glen. Books: The Next Generation, *Bulletin CSHPM/SCHPM* **21** (1997), 16–17. A ''Web Review'' of David Joyce's Internet site on Euclid's *Elements,* discussing how it ''can add genuine richness to a text.'' (DEZ) #25.2.144

Varadarajan, V. S. Niels Vigand Pedersen (1949–1996), *Notices of the American Mathematical Society* **45** (1998), 74–78. A tribute to the life and work of the Danish group theorist, Niels Pedersen. (DEZ) #25.2.145

Vasyukov, V. L. In Memoriam: Vladimir Aleksandrovich Smirnov, 1931–1996, *Bulletin of Symbolic Logic* **2** (1996), 371–372. Comments on the contributions to logic by V. A. Smirnov. (IA) #25.2.146

Vértesi, Péter. *See* #25.2.6.

Von Wright, G. H. *See* #25.2.153.

Wallis, Ruth. Edward Cocker (1632?–1676) and His *Arithmetick:* De Morgan Demolished, *Annals of Science* **54** (1997), 507–522. The writing master and engraver Edward Cocker is remembered chiefly

for his posthumous textbook, *Arithmetick,* which in 1847 De Morgan claimed was the product of its editor, John Hawkins. The author's analysis shows that it was really Cocker's work. (DEZ) #25.2.147

Wang, Hao. *A Logical Journey: From Gödel to Philosophy,* Cambridge: MIT Press, 1996, xiv + 391 pp., hardbound, $40. A continuation of the author's *Reflections on Kurt Gödel,* this book reports the author's conversations with Gödel on interpretation of his published work. The chapters on mind vs machine and on Gödel's Platonism and objectivism are fascinating. [Adapted with permission from *The American Mathematical Monthly* **104** (1997), 890.] (SK) #25.2.148

Wanner, Gerhard. *See* #25.2.63.

Wess, Jane. The Logic Demonstrators of the 3rd Earl Stanhope, *Annals of Science* **54** (1997), 375–395. A study of the unpublished book and papers of Charles Mahon, Earl Stanhope (1753–1816) allows the development of his circular logic demonstrators to be traced. These were the material culmination of his Enlightenment ideals, although greeted with derision later. (JGF) #25.2.149

White, Brian. The Mathematics of F. J. Almgren Jr., *Notices of the American Mathematical Society* **44** (1997), 1451–1456. An overview of the work of Frederick Justin Almgren Jr. in geometric measure theory and geometric calculus of variations. Almgren was called ''the most ignorant person'' in graduate school because of a weak mathematical background consisting of three undergraduate courses taken before a stint in the Navy. He spent his entire career at Princeton. See also #25.1.129. (DEZ) #25.2.150

Williams, H. C. Daniel Shanks (1917–1996), *Notices of the American Mathematical Society* **44** (1997), 813–816. Biographical comments about Dan Shanks with a synopsis of his work in computational number theory. (DEZ) #25.2.151

Wilson, Robin. History of Mathematics Courses, *BSHM Newsletter* **35** (1997), 48–49. The author describes the history of mathematics course he gave at Colorado College using a sources-based approach. (DEZ) #25.2.152

Wilson, Robin. *See also* #25.2.10 and #25.2.51.

Wittgenstein, Ludwig. *Sobre la certeza* [*On Certainty*], Barcelona: Editorial Gedisa, 3rd ed., 1995, 192 pp. See the review by Luis Riera Climent in *LLULL* **20** (1997), 388–389. This classical book was edited by G. E. Ascombe and G. H. von Wright. The translation into Spanish is by J. Llúis Prades and Vicent Raga. (VA) #25.2.153

Yates, Mike. *See* #25.2.94.

Young, David M. Garrett Birkhoff and Applied Mathematics, *Notices of the American Mathematical Society* **44** (1997), 1446–1450. A memorial tribute to Garrett Birkhoff that outlines his contributions to the numerical solution of elliptic partial differential equations, reactor calculations and nuclear power, spline approximations, and fluid dynamics. (DEZ) #25.2.154